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seemed to do the major part of the feeding) close round me in a most excited state, and as I continued to retain the young one, he eventually flew up into the ash tree, where he remained until I released it, and removed from the locality. The average dimensions of the four nests found are as follows, viz: Outside diameter $3\frac{3}{4}$ inches, inside $2\frac{1}{4}$, outside depth $2\frac{1}{2}$ inches, inside $1\frac{1}{2}$, and it will be noticed all were lined with the plant down and flower heads of the Pearly Everlasting, a plant which grows very abundantly here, and is much used by many species of birds for nesting purposes, especially by robins who use it largely in the foundations of their nests.

NOTES ON THE EIDER.¹

BY JOHAN BEETZ, PIASHTÉ BAY, CANADIAN LABRADOR.²

TRANSLATED FROM THE FRENCH AND ANNOTATED

BY CHARLES W. TOWNSEND, M.D.

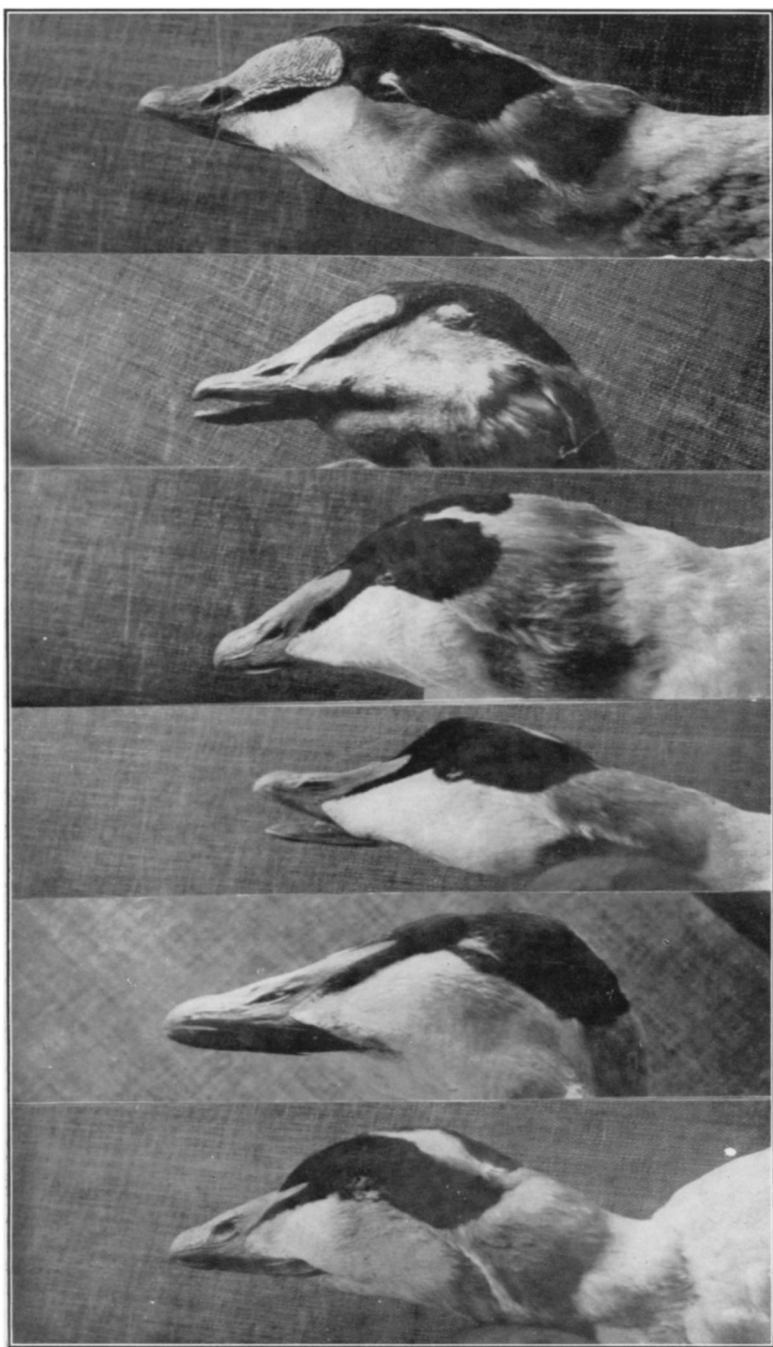
Plate XV.

THE eastern coast of North America possesses four well defined species of Eiders, although naturalists recognize only three. These are the American Eider (*Somateria dresseri dresseri*) with large rounded membranous processes extending backwards from the beak; the Unclassed or Intermediate Eider³ with semi-rounded processes; the Northern Eider (*S. mollissima borealis*) with pointed processes, and the King Eider (*S. spectabilis*).

¹ Read before the Nuttall Ornithological Club, Dec. 20, 1915.

² M. Johan Beetz, who has resided for twenty years at Piashté Bay mid-way between Esquimaux Point and Natashquan — now officially known as Bay Johan Beetz, — is a Belgian by birth and a college graduate. With Mr. A. C. Bent I had the pleasure of visiting him in the spring of 1909, and I spent five days at his house in June, 1915. He is a keen observer and has made an interesting and valuable collection of birds of the coast. He has kindly given me permission to translate and annotate this paper on the Eider. C. W. T.

³ See note at the end of the article.



LABRADOR EIDERS.

The number of eggs in a set of the Eider varies from 6 to 10 accidentally 12. If the eggs of the first laying are taken, the ducks lay a second set of four or five eggs, and sometimes a third of two or three eggs. The first set are well covered with down, which the female plucks from her breast in making the nest. The second laying, when the nest has been destroyed, has very little down in the nest, while the third has none at all, but the eggs are covered with moss, leaves and finely broken little branches.

The three layings here on the north coast of the Gulf of St. Lawrence are between the 10th of May and the 25th of June; very rarely the Eider lays after that date. The female lays an egg every 24 hours until the set is completed. She does not begin to set until 24 hours after the last egg is laid. The duration of the incubation of the Eider is 25 or 26 days. The female Eider does not nest until the age of two years, some not until a year later. The male Eider rarely mates before attaining full adult plumage at three years.

If the female Eider is suddenly frightened from her nest during incubation and has not the time to cover the eggs with down, the bird lets fall on her eggs green and oily excrements totally different from the ordinary excrements¹ of the Eider, and of a frightful odor, so strong that an egg touched with it is refused and even discarded with disgust by the hungriest dog. Even foxes, who love these eggs, will not touch them until the liquid is completely dry on the shells. It then falls off as an unobjectional powder. Ten or fifteen minutes are needed for the complete drying process. If the bird can foresee the danger and has time to prepare — a minute or a minute and a half are necessary — she covers the eggs with down, and then with her beak and feet she covers the whole with moss, leaves and surrounding herbage in so perfect a manner as to completely conceal the nest and deceive the most trained eye.

The first two species of Eiders — the American Eider and the Unclassed Eider — have been in the habit of nesting on the isles

¹ The ordinary excrements of the Eider are formed, as large around as the middle finger and an inch or an inch and a half long. They are composed chiefly of the comminuted shells of the blue or edible mussel, and are to be seen everywhere on the rocky islands and in the neighborhood of the nests. The bird, frightened from the nest, ejects liquid excrements in the same reflex manner as herons and other birds. The excrements do not always touch the eggs but may be deposited on the ground some distance from the nest. C. W. T.

of the Gulf, but since for some years the nesting females have been continually disturbed, and their eggs taken by fishermen and even by strangers coming in egging schooners, these birds have begun to diminish rapidly in numbers. Happily for the last two or three years, this destruction has stopped of itself by the birds' natural instinct for conservation in the following manner: The fox, who has been in the habit of taking for the purpose of feeding its young, the eggs of birds nesting on the main land and on islands easily reached at low tide, has gradually diminished in numbers or at least has retreated to the interior on account of the intense winter hunting for skins, and the summer hunting for live animals for breeding purposes. A large part of the Eiders have profited by the retreat of the fox, and have adopted the habit more and more every year of nesting on the mainland on the borders of the little fresh water lakes so abundant along the coast, or on the islands in these lakes. If the lakes are near the seashore the female uses little paths she has made; if at a distance, she passes too and fro on the wing. On the main land she has more space, conceals her nest better and man is rarely able to rob it. On this account in place of a diminution in numbers of the Eider there is already an increase, and in a few years, when the greater part of the Eiders have adopted the habit of nesting on the mainland, the increase will be very rapid.¹

Immediately the young are dry after hatching, the female conducts them to the salt water. At the approach of danger — a boat

¹ I am afraid M. Beetz is too optimistic in this. As a result of my own observations I have come to the conclusion that the Eider not only is rapidly diminishing in numbers but that in many places it is almost exterminated, and that its numbers are not kept up by a transference of its breeding habitat to the mainland. Wherever fishermen or Indians are found, the islands are nearly cleared of Eiders, and the small numbers of birds about, show that they are not nesting concealed on the mainland. For example in the transit of 18 miles through the Petite Rigolette I saw only one flock of thirty and those were near the entrance. In the great lake-like expanse at the mouth of the St. Augustine River, where Eiders up to a comparatively few years ago bred in large numbers on the rocky islands, hardly any were to be seen and none at all in the little lakes of the mainland. The only freshwater lakelet on the coast where I found a female Eider and her brood of ducklings was on the large island of Wapitagun — practically a part of the mainland. At Piashte Bay and Natashquan the Eskimo dogs are confined in the summer, but at the other settlements to the eastward the dogs roam unrestrained, and are as bad as foxes in finding and devouring eggs and young. But even in regions away from any settlement and its dogs I have never found any evidence of the Eider nesting on the mainland except in trifling numbers. C. W. T.

or a bird of prey — the female Eider, who has her brood with her, goes on ahead and even tries to draw on herself the danger by simulating a wounded bird and leading the enemy from her young. All this time she emits croaking cries resembling *Croou Croou Croou*.

In some years weasels pass the summer on the shore and make great destruction of the eggs of the Eider.

But the greatest destroyer of the Eider is without doubt *Larus marinus*, the gull with the black mantle, called English Gull or Great Black-backed Gull, which during the years when there are not enough little fish to feed its young, kills with ease all the young Eiders that it finds. Flying at a great height this Gull sees its prey from afar, and as the young Eider (up to about ten days of age) dives but a very short distance, by sailing just above the water the Gull is able to watch it constantly, and follow it, until, when the young is so fatigued that it is unable to dive more, the Gull seizes it with its powerful beak. If during the journey to the nest, the young still struggles in the beak, the Gull carries the duckling to a height of 30 or 40 rods, and, calculating the strength of the wind, drops it on the rocks where it is killed. The Gull immediately follows and picks up the dead body.

In the same manner the Great Black-backed Gull breaks the mollusks whose shell is too hard to crush with its beak. I have seen in a very strong wind this Gull rise to a height of fifty rods, let lose its prey at more than twenty rods to windward of the rocks and have seen the prey fall directly on the rocks; often the rock is only three or four rods in circumference but never have I seen the bird make a miss. Happily for the conservation of the Eider this Gull is diminishing every year in numbers owing to the destruction of its eggs.¹

Migration. The four species of Eiders mentioned above arrive in the spring time here on the north shore between the April 15 and June 15; in the last month, May 15 to June 15 — only the two northern species *S. mollissima borealis* and *S. spectabilis* pass. All

¹ The people of the coast do not need any argument like the above to incite them to exterminate this splendid Gull. The eggs and the young birds are excellent eating and are eagerly sought everywhere. Man is of course the chief destroyer of the Eider as of all the water birds of the Labrador Peninsula. If proper methods of conservation of the Eider were adopted there would be no need to fear the effect of the toll taken by the Great Black-backed Gull. C. W. T.

the species in the spring arrive from the south, pass by the west point of the island of Anticosti, strike the north shore at the Mingan islands, often as far west even as Godbout, and then descend the whole length of the shore, pass the Straits of Belle Isle and go north. In the autumn, in September, October and November only three of these species — *S. dresseri*, the intermediate species and *S. mollissima borealis* — return by the Gulf as far as Mingan and even Godbout and these strike the western point of the island of Anticosti to continue their migration to the south. Many of these species — partly the young hatched late — winter around Anticosti and on the north shore of the Gulf of St. Lawrence. The greater part of these that winter are the intermediate and Northern Eiders, very few of the American Eiders and none of the King Eiders. The migration in the autumn of the King Eider is by Newfoundland as well as by the eastern point of Anticosti. In certain winters many King Eiders stay about Anticosti.

It is a curious fact that between June 15 and July 15 on the highway of the north coast between Godbout and Chateau Bay all the male American Eiders leave their females and migrate between Chateau and Cape Chidley. Here the spring and the period of nesting are each a month later, and it would seem to be a possibility that by the mating of the male *S. dresseri* with the female *S. mollissima borealis* there would be created a mixed species, not classed, intermediate with membranous processes semi-rounded. This should be an easy and very interesting subject to investigate.

Moult. All the species of Eiders male as well as female do not reach full adult plumage until the age of two years and two months, that is to say until August of the third year after their hatching out. All young Eiders have four moults of the body feathers and one moult of down before assuming the complete adult plumage. The first moult takes place in September when they are about four months old; the second moult occurs the following spring in May when they are about eleven months old; the third moult occurs in the September following at the age of about sixteen months; the fourth moult occurs in June when the subject is about two years old; the fifth moult into the complete adult plumage takes place after the end of August or the beginning of September when the bird is two years and two months old, and is complete at the age of about two years and three and a half months.

The moult of the down occurs in September of the first year at the age of four months; the second moult of the down begins in June at two years of age and continues all the summer and is complete at the end of August.

The adult Eider has two annual moults, the first in April and May and is partial as it does not include the large wing and tail feathers; the second moult occurs during the last of August and the first of September and is complete including the large feathers of the wings and tail.

As a food the flesh of the Eider is good for the table fifty days after it is hatched and continues to be good until the age of one and a half years. During this period the young bird eats only prawns and much herbage. After a year and a half the flesh has an oily taste due to the fact that the bird takes at a great depth molluscs and little fish. The very old subjects do not resort to the deep water but return to the food of the young. Their flesh loses its oily taste but is firmer than that of the young.

Note. A study of the adult male specimens sent me by M. Beetz, as well as those in the Museum of Comparative Zoölogy at Cambridge, shows all degrees of gradation in the size of the membranous processes from the long, broad rounded ones of *dresseri* to the shorter acute ones of *borealis* as is to be seen in the accompanying photograph. The amount of green also varies. In typical *dresseri* it is extensive on the sides and back of the neck and forms a border to the dark cap, extending forward beyond the eye. In typical *borealis* it is less extensive on the sides and back of the neck and does not border the dark cap. In M. Beetz's intermediate form the amount of green varies, and it does not border the dark cap. Baird, Brewer and Ridgway¹ were unable to find any other differences between *dresseri* and *borealis* except in the size of the membranous processes. They say "the extent of the green of the head is quite variable, according to the individual." Coues² speaking of the membranous processes in the two species says: "The difference is obvious in comparison of specimens, and may

¹ The Water Birds of North America. 1884, Vol. II, p. 77.

² Key to North American Birds. Fifth Edition, 1903, Vol. II, p. 904.

now be held of specific value, as no intermediate specimens are forthcoming." It remained for M. Johan Beetz to point out the fact that there is an intermediate form between *dresseri* and *borealis*. Instead of this form being a new species, as M. Beetz suggests, it seems to me, however, that his important discovery shows that *dresseri* intergrades with *borealis*, and that like *borealis* it should be classed as a subspecies of *mollissima*. If this view is accepted this Eider should be reduced from its specific station and be listed as *Somateria mollissima dresseri*. A study of the breeding Eiders about Hamilton Inlet, the supposed dividing line between the ranges of *borealis* on the north and *dresseri* on the south, would be of interest.—C. W. T.

NOTES ON THE BIRDS OF THE ELK MOUNTAIN REGION, GUNNISON COUNTY, COLORADO.

BY EDWARD R. WARREN.

Plates XVI–XVIII.

THE region covered by the following notes is the northwestern portion of Gunnison County, which is in the western third of the State, about midway between the north and south boundaries. The county is of irregular shape, and the easterly boundary is the Continental Divide, with several summits attaining an elevation of more than 14,000 feet above sea level. The Elk Mountain Range branches from the Divide with a somewhat northwesterly trend, and forms the northerly boundary as far as Snow Mass Peak, whose elevation is 13,970 feet, and whence the line runs due west over an exceedingly rough country, as the writer can testify from personal acquaintance, to the Huntsman's Hills, a comparatively low divide; thence northwesterly along the Hills to intersect the summit of the Grand Mesa, which also forms a part of the boundary for a short distance. The west boundary of the County is the